

Resource use and foraging tactics in a south Indian amphibian community

Indraneil Das*

Abstract

This study looks at resource (trophic, spatial and temporal) use and foraging tactics in a community of eight species of anuran amphibians at a seasonal locality in south India. Within the community, the species are differentiated into a sit-and-wait group, which are large, cryptic and sedentary foragers showing a relatively wide dietary spectrum; and a widely foraging group, whose members are aposematically coloured, and actively forage on a few prey types. However, there are indications that these modes represent two ends of a continuum, with some species showing greater plasticity in prey use than others. Sympatric species, except dietary specialists, were found to generally overlap broadly in diet. Microhabitats are partitioned to a greater degree than food, the most closely related species, which tend to show similar diets, selecting different foraging areas.

Seasonality affects the activity of two of the three non-sit-and-wait species, but none of the sit-and-wait ones, possibly because sedentary foraging is more energetically efficient during the resource lean season. Net gains per unit energy spent are presumably lower than for active foraging.

In general, both trophic and spatial niches increase in breadth with body size across species, with larger species taking more types of food and using more different microhabitat types than smaller ones. Smaller species take smaller prey, but the mean number of prey harvested is higher than in larger frogs. Differences in the use of environmental resources are thought to be a factor in determining species composition in a community, within which larger species tend to be generalists, while their smaller sympatric species are more specialized in their use of environmental resources.

Key words: resource use, community, niche, foraging, amphibians.

* Animal Ecology Research Group, Department of Zoology, University of Oxford, South Parks Road, Oxford OX1 3PS, United Kingdom.
Present address: Museum of Comparative Zoology, Harvard University, 26 Oxford Street, Cambridge, MA 02138, USA.